3-SIGMA VALUE

Premium Wi-Fi is a Fatally-Flawed Business Model

This document is for informational purposes only and all information contained herein is subject to revision and completion. This document does not constitute or form part of an offer to issue or sell any securities or other financial instruments, nor does it constitute a financial promotion, investment advice or an inducement or incitement to participate in any product, offering or investment. Any such offer will be made only by means of a confidential private placement memorandum or such other offering documents as may be delivered by 3-Sigma Value to prospective investors and is subject to the terms and conditions contained therein.

The views, analyses and opinions herein reflect the perspective of 3-Sigma Value. No representation, warranty or undertaking, express or implied, is given as to the accuracy or completeness of the information or opinions contained herein. No reliance may be placed for any purpose on the information and opinions contained in this document or their accuracy or completeness and nothing contained herein shall be relied upon as a promise or representation whether as to past or future performance. Certain information in this document has been derived from materials furnished by outside sources. 3-Sigma Value assumes no responsibility for independent verification of such information and has relied on such information being complete and accurate in all material respects. Nothing contained herein should be construed as legal, business or tax advice. Each prospective investor should consult its own attorney, business adviser and tax adviser as to legal, business, tax and related matters concerning the information contained herein.

3-SIGMA VALUE

Premium Wi-Fi is a Fatally-Flawed Business Model

As wireless connectivity has become ubiquitous so has the idea that publicly-accessible wireless connectivity (Wi-Fi) should be free. This extends from airports and on airplanes to the far reaches of the planet. Free connectivity is reality and any company bilking customers on the notion of premium WiFi is bound to be creatively destroyed. This thesis leads us to a handful of providers, but, for the purpose of this report we will focus on the two that had a material impact on performance last year. Both remain in the portfolio.

Gogo (GOGO) offers in-flight internet connectivity (Wi-Fi) and digital entertainment to commercial and business airlines, including Delta Air Lines (DAL), American Airlines (AAL), US Airways (LCC) and Alaska Airlines (ALK). Competition is tremendous, not only from traditional aero communications providers such as Panasonic – contract with United Continental (UAL); Global Eagle Entertainment (ENT) / Row44 – contract with Southwest Airline (LUV), and Viasat (VSAT) – contract with JetBlue (JBLU), but also from traditional telecom providers. The only competitive advantage for GOGO is the ever unreliable *first mover advantage*.

GOGO Capitalization as of 9/30/15	
Price as of June 21, 2013 IPO	**$17.00**
Price as of December 31, 2015	**$17.80**
FD Shares Outstanding (incl. anti-dilutive)	83.8
Market Capitalization	**1,492.1**
Cash	388.0
Debt (Senior Term Facility due 6/21/17)	236.6
3.75% Convertible Notes (x = $23.85)	340.0
Enterprise Value (EV)	**1,680.8**
EV / Revenue - 2015	3.3x
EV / Revenue - 2016	2.7x
EV / Revenue - 2017	2.3x
EV / Revenue - 2018	1.9x
EV / EBITDA - 2015	31.6x
EV / EBITDA - 2016	23.2x
EV / EBITDA - 2017	16.3x
EV / EBITDA - 2018	11.4x

Phone (646) 452-3005 Fax (646) 349-3725
70 East 55th Street, 17th Floor, New York, NY 10022

GOGO offers connectivity on more airplanes than any other company, which would be an advantage if the technology were any good. GOGO has spent hundreds of millions of dollars ($362 million of capital expenditures over the past three years alone) building out a puny amount of bandwidth based on crappy technology called ATG (air-to-ground). In 2006, GOGO acquired exclusive rights to 4 MHz of ATG spectrum for $38.339 million, then built a satellite network with 250 cell sites located through the U.S. ATG is old technology based on EVDO Rev A that offers only 3.1 Mbits of throughput (divided amongst all the passengers). An update, ATG-4 (EVDO RevB) offers 9.8 Mbits to the aircraft, but that is still crap. A litany of further advancements will continue to improve throughput but at the end of the day ATG has two technological limits that are fatal flaws – it does not work over bodies of water, and therefore is limited to flying over land, and it can't stream video.

After years of promoting ATG, GOGO announced adoption of a newer technology called 2Ku, with peak speeds of 70 Mbits. In addition to the 7x improvement in throughput, 2Ku is a global satellite solution with lower upfront capex and the flexibility to buy more transponder capacity on a transponder by transponder basis. GOGO plans to replace its entire ATG fleet with 2Ku, costing hundreds of millions of dollars, but the problem is that 2Ku is neither proprietary nor the solution. It is a *transitional technology*. 70 Mbits is not nearly enough for a plane full of people. One of the most important factors driving GOGO's financial performance is service take rate. In the third quarter of 2015, service take rate was a mere 5.6% - which means only 5.6% of flyers purchased GOGO's inflight connectivity service. Part of the reason for the low usage is the cost but the main reason is the limited amount of bandwidth – at 9.8 peak Mbits, only a few people can access the internet at the same time. With 70 Mbits, maybe 15 or 20 people can comfortably surf, still nowhere near enough bandwidth to cover a majority of flyers on most commercial flights. Thus, GOGO is planning to build an entirely new network with full knowledge it is already substandard. GOGO views itself as if it were AT&T or Verizon, building generation on top of generation of telecommunications infrastructure, executing an iterative process with unlimited resources. Unfortunately, GOGO is a small company with limited resources that will continue to burn cash as long as it wants to compete.

Boingo Wireless (WIFI) sells Wi-Fi service to 212,000 retail customers (down 26% from 286,000 in 3Q14) and 46,000 military subscribers (up from 2,000 in 1Q14). Boingo also sells wholesale Wi-Fi service to AT&T and Verizon.

Wi-Fi resides on 5GHz spectrum that is abundant and free. Wi-Fi equipment (radios and antenna) is cheap and everywhere. The price of Wi-Fi is free. So why does anyone still pay

Phone (646) 452-3005 Fax (646) 349-3725
70 East 55th Street, 17th Floor, New York, NY 10022

$9.95 per month to be able to access Boingo Wi-Fi (or single-use Boingo AsYouGo for $7.95 per day)? As a result, Boingo's core retail Wi-Fi business is in secular decline.

Moreover, Boingo is bilking our troops. Boingo's new growth business is providing broadband and IPTV services for troops stationed on U.S. military bases. The most common plans are the $29.95 monthly subscription for Standard services (Internet or IPTV) and the $49.95 monthly subscription for Expanded services (Internet or IPTV). The Standard combo package is $54.95 per month and the Expanded combo package is $89.95 per month. Military personnel can also add premium channels at additional cost to enhance their IPTV service. Plans are available on daily (Internet only), weekly and monthly schedules, with different service options at each interval. These services are only available on the U.S. military bases.

Think about it – the least that military personnel can pay for broadband connectivity is $29.95 per month ($360 per year). Meanwhile, Google built out broadband connectivity for free for all of Kansas City as an experiment that has since expanded to other cities in the U.S. If the rest of us can get free Wi-Fi then why is our military forced to pay exorbitant prices? When a company resorts to fleecing the military, it is but one step away from facing reality. As of 9/30/15, Boingo built out its high-speed WiFi and IPTV network covering 178,000 military beds with a total addressable market (TAM) of 300,000 beds. Boingo's 46,000 military subscribers represent 26% penetration. We make various assumptions regarding build-out (up to 100% of TAM) and penetration (up to 40%) to arrive at the conclusion that the best Boingo can do on a free cash flow basis is roughly breakeven. More likely, Boingo will burn through what's left of its cash, a mere $8.6 million, requiring a highly dilutive capital raise.

WIFI Capitalization as of 9/30/15	
Price as of 12/31/15	$6.62
FD Shares Out (excl. anti-dilutive)	37,140
Market Cap	245,867
Debt	21,500
Cash	8,556
EV	258,811
EV / 2015 Revenue	1.8x
EV / 2016 Revenue	1.6x
EV / 2017 Revenue	1.6x
EV / 2015 EBITDA	13.3x
EV / 2016 EBITDA	8.1x
EV / 2017 EBITDA	6.4x

Phone (646) 452-3005 Fax (646) 349-3725
70 East 55th Street, 17th Floor, New York, NY 10022

3-SIGMA VALUE

IMPORTANT INFORMATION

This document is for informational purposes only and all information contained herein is subject to revision and completion. This document does not constitute or form part of an offer to issue or sell, or of a solicitation of an offer to subscribe or buy, any securities or other financial instruments, nor does it constitute a financial promotion, investment advice or an inducement or incitement to participate in any product, offering or investment. Any such offer will be made only by means of a confidential private placement memorandum or such other offering documents as may be delivered by 3-Sigma Value to prospective investors and is subject to the terms and conditions contained therein. The information set forth herein does not purport to be complete. The offering memorandum will contain additional information about the terms and conditions of an investment in this opportunity and risk disclosures that are important to any investment decision and should be read completely before a prospective investor considers making an investment.

The views, analyses and opinions reflected herein reflect the perspective of 3-Sigma Value. No representation, warranty or undertaking, express or implied, is given as to the accuracy or completeness of the information or opinions contained herein. No reliance may be placed for any purpose on the information and opinions contained in this document or their accuracy or completeness and nothing contained herein shall be relied upon as a promise or representation whether as to past or future performance. Certain information in this document has been derived from materials furnished by outside sources. 3-Sigma Value assumes no responsibility for independent verification of such information and has relied on such information being complete and accurate in all material respects. Nothing contained herein should be construed as legal, business or tax advice. Each prospective investor should consult its own attorney, business adviser and tax adviser as to legal, business, tax and related matters concerning the information contained herein.

This document contains confidential information and the recipient hereof agrees to maintain the confidentiality of such information. This document is intended solely for the information of the person to whom it has been delivered. Distribution of this information to any person other than the person to whom it has been originally delivered and to the advisers of such person who are also subject to a duty of confidentiality is unauthorized, and any reproduction or transmission of these materials, in whole or in part, or the divulgence of any of its contents to third parties, without the prior consent of 3-Sigma Value, is prohibited.

Statements, estimates and projections with respect to future outcomes are based on assumptions made by 3-Sigma Value, which may or may not prove to be correct. Nothing contained herein is, or should be relied upon as, a promise, representation, prediction or projection of future performance of the investment. No representation is made as to the accuracy of any statements, estimates or projections contained herein.

The distribution of this document may be restricted in certain jurisdictions. The information herein is for general guidance only, and it is the responsibility of any person or persons in possession of this document to inform themselves of, and to observe, all applicable laws and regulations of any relevant jurisdiction. This document is not intended for distribution to, or use by any person or entity in any jurisdiction or country where such distribution or use would be contrary to local law or regulation.

Phone (646) 452-3005 Fax (646) 349-3725
70 East 55th Street, 17th Floor, New York, NY 10022